



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Masakazu Okuda

Serial No.: 09/807,823

Group Art Unit: 2853

Filed: April 19, 2001

Examiner: Nguyen, Lam S.

For: METHOD FOR DRIVING INK JET RECORDING HEAD

Honorable Commissioner of Patents  
Washington, D.C. 20231

AMENDMENT UNDER 37 C.F.R. §1.111

Sir:

In response to the Office Action dated November 13, 2002, please amend the above-identified application as follows:

IN THE CLAIMS:

Please amend claims 18-22 as follows:

18. (Amended) A method for driving an ink jet recording head, comprising:

applying a driving voltage to an electro-mechanical converter to deform the electro-mechanical converter to thereby change a pressure in the pressure generating chamber filled with ink, thus ejecting ink droplets through a nozzle in communication with the pressure generating chamber, wherein said applying said driving voltage comprises:

at least a first voltage changing process for applying a voltage in a direction that increases a volume of said pressure generating chamber;

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a second voltage changing process for then applying a voltage in a direction that reduces the volume of said pressure generating chamber; and

a third voltage changing process for applying a voltage in a direction that increases the volume of said pressure generating chamber again;

setting voltage changing times  $t_2$  and  $t_3$  during the second and third voltage changing processes so as to have such lengths as shown below, relative to a resonance frequency  $T_c$  of a pressure wave generated in the pressure generating chamber:

$$0 < t_2 < T_c/2$$

$$0 < t_3 < T_c/2; \text{ and}$$

providing said nozzle with an about 20 to about 30  $\mu\text{m}$  opening diameter to eject said ink droplets in a size of about 5 to about 25  $\mu\text{m}$  size.

19. (Amended) A method for driving an ink jet recording head, comprising:

applying a driving voltage to an electro-mechanical converter to deform the electro-mechanical converter to thereby change a pressure in the pressure generating chamber filled with ink, thus ejecting ink droplets through a nozzle in communication with the pressure generating chamber, wherein said applying of said driving voltage comprises:

at least a first voltage changing process for applying a voltage in a direction that increases a volume of said pressure generating chamber;

a second voltage changing process for then applying a voltage in a direction that reduces the volume of said pressure generating chamber;